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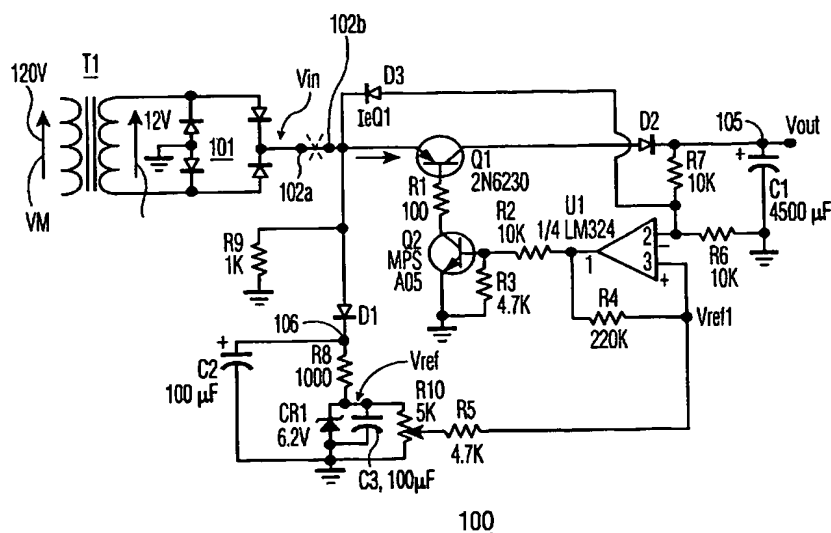
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(54) Title: LINE FREQUENCY SWITCHING REGULATOR



(57) Abstract: In a switch mode power supply (SMPS), a mains supply voltage source (VM) is coupled to a rectifier (101) for producing an input supply voltage. The rectified input supply voltage is coupled unfiltered to an input (Vin) of the SMPS. A switching power transistor (Q1) having a controllable duty cycle is controlled by a duty cycle modulated signal for producing a regulated output supply voltage from the rectified input supply voltage. The periodic waveform of the mains supply voltage is used to establish the timings of the duty cycle modulated signal. In each cycle, current flow is initiated in the transistor, when the transistor is already fully turned on and a voltage developed between its main current conducting terminals is low or close to zero volts. When the output supply voltage attains the required level the transistor is turned off. Hysteresis is provided for preventing the transistor from turning on again in the same cycle, after it has been turned off.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/10013

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G05F 1/10, 1/40 1/44
 US CL : 323/ 282, 284, 285, 235

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 323/ 282, 284, 285, 235

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 USPTO APS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	US 6,388,433 B2 (MARTY) 14 May 2002 (14.05.2002), see entire document.	1-13
A	US 4,507,546 A (FORTUNE et al) 26 March 1985 (26.03.1985), see entire document.	1-13
A	US 3,758,844 A (HARKENRIDER et al) 11 September 1973 (11.09.1973, see entire document.	1-13

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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